

CLAIMS

What we claim is:

1. A locking device comprising:

a drive motor connected to a finite power supply, said drive motor comprising a shaft and
5 a predetermined number of windings; and

a threaded rod axially connected to said shaft, said rod comprising a predetermined thread
pitch,

wherein at least one of said number of windings and said thread pitch are selected to
optimize a power consumption of said locking device.
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2. The locking device according to claim 1, wherein a life of said finite power supply is
maximized based on a selection of said at least one of said number of windings and said thread
pitch.
- 15 3. The locking device according to claim 1, wherein said finite power supply supplies pulses
of electricity to said drive motor, and at least one of said number of windings and said thread
pitch are selected so as to optimize a level of said pulses.
4. The locking device according to claim 3, wherein said pulses are no greater than about
20 100 milliamps.

5. The locking device according to claim 4, wherein said pulses are no greater than about 50 milliamps.

6. The locking device according to claim 1, wherein said finite power supply comprises a
5 battery.

7. The locking device according to claim 1, wherein said number of windings comprises twice the windings of a conventional motor for a given application.

10 8. An electric lock comprising:

a drive motor having a finite power supply, said drive motor comprising a shaft and a predetermined number of windings;

a threaded rod axially connected to said shaft, said rod comprising a predetermined thread pitch,

15 a traveller comprising a threaded bore which mates with said threaded rod so that rotation of said threaded rod causes said traveller to move along an axis of said threaded rod; and

a lock member which contacts said traveller,

wherein at least one of said number of windings and said thread pitch are selected to maximize a life of said finite power supply.

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9. An electric lock assembly comprising:

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a drive motor connected to a first member and having a finite power supply, said drive motor comprising a shaft and a predetermined number of windings;

a threaded rod axially connected to said shaft, said rod comprising a predetermined thread pitch,

5 a traveller comprising a threaded bore which mates with said threaded rod so that rotation of said threaded rod causes said traveller to move along an axis of said threaded rod;

a lock member which contacts said traveller, said lock member having a leading end; and

a strike connected to a second member, said strike having an opening for receiving said leading end so as to lock said first and second members,

10 wherein at least one of said number of windings and said thread pitch are selected to maximize a life of said finite power supply.

10. A drop box comprising the electric lock assembly according to claim 9, wherein said lock assembly controls an access to said drop-box.

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11. The drop box according to claim 10, wherein said first member comprises a wall of said drop box and said second member comprises a door of said drop box.

12. A system for delivery of an item, said system including the drop box according to claim

20 10 and further comprising:

an electronic tag associated with said item and comprising a first transceiver,

wherein said drop box is located at a destination for said item, and further comprises a second transceiver which wirelessly communicates with said first transceiver to open said lock assembly.

5 13. The system according to claim 12, further comprising:

an access card comprising a third transceiver, for wirelessly communicating with said second transceiver to open said lock assembly.

10 14. The system according to claim 12, wherein said drop box further comprises a first memory device for storing a first identification number, and wherein said electronic tag further comprises a second memory device for storing a second identification number.

15 15. The system according to claim 12, wherein said drop box further comprises a processor for comparing said first identification number and said second identification number, and wherein said drop box unlocks when said first identification number matches said second identification number.

16. A method of delivering an item, said method utilizing the drop box according to claim 10, and comprising:

20 associating said item with an electronic tag comprising a first transceiver;

transporting said item to said drop box further comprising a second transceiver; and

opening said lock assembly by using said second transceiver to wirelessly communicate with said first transceiver.

17. The locking device according to claim 1, wherein said finite power supply

5 has a capacity of over 2000 mAH.

18. The locking device according to claim 1, wherein said finite power supply comprises a D battery and said locking device has 300,000 cycles during a useful life of said battery.

10 19. The locking device locking device according to claim 1, wherein said finite power supply comprises a AA battery and said locking device has 40,000 cycles during a useful life of said battery.

20. A programmable storage medium tangibly embodying a program of machine-readable
15 instructions executable by a digital processing assembly to perform a method of delivering an item, said method utilizing the drop box according to claim 10, and comprising:

associating said item with an electronic tag comprising a first transceiver;

transporting said item to said drop box further comprising a second transceiver; and

opening said lock assembly by using said second transceiver to wirelessly communicate
20 with said first transceiver.